LOW-VOLTAGE CLASS-AB OUTPUT STAGE AMPLIFIER

RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Application No. 60/310747, filed August 6, 2001, having the same title "LOW-VOLTAGE CLASS-AB OUTPUT STAGE AMPLIFIER" and the same inventor.

FIELD OF THE INVENTION

[0002] The present invention relates to electronic amplifiers and, in particular, to class-AB amplifiers.

BACKGROUND OF THE INVENTION

[0003] The output stage of class-AB amplifiers operates by using a current source and a current sink. This configuration is sometimes referred to as a "push-pull" configuration since a first branch of the output stage "pushes" or sources currents to a load while a second branch of the output stage "pulls" or sinks current from the load. Class-AB amplifiers avoid the high power consumption of a class-A amplifier by always having one output branch substantially turn off when the other output branch is turned on. Although the current in one leg of a class AB amplifier is substantially turned off there is a small amount of current flowing in that leg. The small residual current in the class AB amplifier avoids the crossover distortion produced the turning on and off of the currents in class-B amplifiers. Thus class-AB amplifiers are able to achieve a relatively high current output while maintaining a low quiescent current. The currents in class-AB amplifiers are inversely related such that when one current becomes large, the other current becomes very small. When a current becomes small, it may disadvantageously result in a "cut-off" in one of the output transistors, which causes the undesirable crossover distortion.

[0004] This problem has been addressed in amplifiers by using the harmonic mean principle that is described by the equation $z=x*y/(x+y)$, where x and y represent push